UNIVERSITÉ DE PARIS

FACULTÉ DES SCIENCES

LABORATOIRE DE GÉNÉTIQUE

13. RUE PIERRE CURIE. PARIS V^e^

Tél. : ODÉon 16-40

Ephrussi

November 30, 1955

Professor J. LEDERBERG
Department of Genetics
University of Wisconsin
Madison 6, Wisconsin

Dear Josh,

1) I am sending you today four strains of yeast :

WY	276/3 br/1 A2	mating type	-
"	B15 p4	"	+
"	53/19 a	"	-
"	53/19 c	"	+

These strains are those used as testers in our earlier work (Chen, Ephrussi and Hottinguer, Heredity, 1950). The first two strains are "vegetative petites". The last two were "segregational petites" (recessive r + cytoplasmic factor). These strains have not been used since 1951 and the tests performed last week did not show the presence of the cytoplasmic factor. This does not surprise me because our previous experience shows that the latter is easily lost, converting "segregational petites" into what we called "double mutants". I presume that these two strains still carry the recessive r, and that your student will therefore be able to obtain strains of "segregational petites" by crossing them to wild type and dissecting a few asci. I would have been happy to have this work done here for you, but my assistant, who does these things, is on a maternity leave until January.

2) Concerning the red pigment of adenineless mutants : strain 276/3Br/1A_2 which I am sending you is an example. It is derived from 276/3Br which has normal respiration and is adenineless and red. 1A_2 is petite and is white on the usual yeast extract (low glucose) media. However various factors and, in particular, high glucose content (above 3 %) will make it produce red pigment.

The non-production of pigment by petites is due to their inefficient sugar utilization. Pigment formation requires the presence of sugar after arrest of growth ; on the usual (low glucose) media the arrest of growth of petites is caused by exhaustion of glucose, hence there is no pigment formation.

Pigment formation in its last phase also depends more directly on oxydations (via a system which is not the Warburg-Keilin system). Therefore, adenineless strains with normal respiration from white colonies under anaerobiosis ; these will rapidly turn red on exposure to air. Red pigment formation is inhibited by excess adenine. The concentration of adenine must therefore be controlled in synthetic media.

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Lastly, there apparently exist adenineless strains blocked at earlier stages and which never form red pigment. I think Roman, who is doing some very interesting and extensive work on ad yeast, has found such strains.x)

3) I promise not to take back any part of what I said to you about your commentary at the Detroit meeting. You can safely send me a carbon.

4) In your last letter you forgot to write about your Salmonella results which you intended to tell me in Detroit.

5) Your congratulations have been conveyed to Harriett and Anne and are appreciated (at least by the former).

Kinds regards,

Boris EPHRUSSI

x) Reversions from ad requirement to ad independence are frequent, but have no selective advantage in petites. An easy way of checking that strain 1A2 (which I am sending you) still carries ad is to plate it on a medium consisting of 0.5 % yeast extract + 6 % glucose. It should form red colonies.